**BY ORDER OF THE COMMANDER** **341 CES OPERATING INSTRUCTION 32-1054**
**341st Civil Engineering Squadron (AFSPC)**
**Malmstrom AFB, Montana 59402-7536** **15 June 1997**

**Civil Engineering**

# BASE AND MISSILE SITE CORROSION CONTROL/CATHODIC PROTECTION, OPERATION AND MAINTENANCE

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

This operating instruction, IAW AFI 32-1054, establishes procedures for maintenance and operation of corrosion control and cathodic protection systems, maintaining required records, and periodic inspections and tests as prescribed by:

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| AFI 32-1054 | Corrosion Control |
| ETL 91-6 | Catholic Protection ‘ |
| MIL HDBK 1004/10 | Electrical Engineering Cathodic Protection |
| MIL I-IDBK I 110/ 1 | Paints,& Protective Coatings |
| AFM 85-5 | Painting of Air Force Facilities (to be replaced w/ MIL I-IDE3K 1136) |
| ETL 86-4 | Paints and Protective Coatings |

## 1. Responsibilities:

1.l. The Commander, Operations flight (341 CES/CEO) is assigned base and geographically separated units responsibility for implementing AFI 32-1054. The Missile Engineering Flight Chief (341 CES/ CEM) is assigned missile site and T-9 trainer responsibility for implementing AFI 32-1054. The corrosion engineers will serve as the approving authority and manage acts necessary to assure adequate protection, to this end. The Chiefs of Resources and Design Branches (341 CES/CE/CEC) must support and perform those tasks necessary for success. Also, the Squadron Training Manager (CCQT), must support the corrosion control training requirements and ensure personnel assigned corrosion duties attend schools necessary to assume duties and responsibilities within one year.

1.2. The 341CES/CER must ensure proper manpower is Authorized to support the corrosion control effort.

1.3. The 341 CES/CER must ensure all work identified and approved by the corrosion engineers is supported with funding.

1.4. The 341 CES/CEO must assure all work identified and approved by the corrosion engineers is supported. In addition, he/she must assure that:

1.4.1. The base corrosion engineer or alternate, missile corrosion engineer, or cathodic protection shop is informed of all utility and petroleum, oil, and lubricants (POL) system leaks.

1.4.2. The corrosion engineer, alternate corrosion engineer, missile corrosion engineer, or cathodic protection shop is provided the actual cost for repairing all utility and POL system leaks by CEOC.

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CEOIEC/CEOI W )

1.4.3. The work controllers will notify CEOE at ext 6140 when excavation work or disassembly is complete and the suspected corrosive damage is ready for inspection. CEOE will then notify the first person available of the following: the corrosion engineer, the alternate corrosion engineer, or any engineer in CEOE.

1.4.4. The zone shall not install or isolate any metallic underground structure unless cathodic protection is provided, unless work is coordinated with corrosion engineers or cathodic protection foreman.

1.4.5. The cathodic protection shop works in close coordination with the corrosion engineers.

1.4.6. The cathodic protection shop takes all necessary readings at the leak or failure site, and records this data on the applicable forms.

1.5. The base corrosion engineer is responsible to the 341 CES/CEO for reviewing and signing all contract drawings and in-house work for corrosion control and prevention. The base corrosion engineer is responsible for the following:

1.5.1. Reviewing the base cathodic protection logs.

1.5.2. Oversees that technical instructions are provided to the cathodic protection slop and establishment of the desired operating level for each cathodic protection system.

1.5.3. Maintaining a file of technical records on each installed cathodic protection system.

1.5.4. Inspecting and recording all leaks in all underground utility systems due to corrosion.

1.5.5. Preparing the annual Cathodic Protection System Survey.

1.5.6. Coordinating on digging permits.

1.5.7. Participating in project design reviews concerning corrosion control.

1.6. The missile corrosion engineer is responsible to the 341 CES/CEM for reviewing and signing all missile related contract drawings and in-house work for corrosion control and prevention. The base corrosion engineer will assist the missile corrosion engineer. In addition, the missile corrosion engineer is responsible for the following:

1.6.1. Assist in the review of the missile site cathodic protection logs.

1.6.2. Assist in the technical instructions to the cathodic protection shop and the establishment of operating levels for each cathodic protection system.

1.6.3. Assist in the file maintenance of technical records on each cathodic protection system.

1.6.4. Inspect and record all leaks in underground utility systems in the missile field due to corrosion.

1.6.5. Coordinate on missile site digging permits.

1.6.6. Provide written data such as monthly rectifier operating values for inclusion in the annual cathodic protection system survey and assist in the preparation of the survey as necessary.

1.6.7. Assist in the evaluation of missile site bonds and interference.

1.6.8. Participate in project design reviews concerning corrosion control.

1.7. The alternate corrosion engineers shall function as the corrosion engineers in their absence, and shall assist in maintaining records and inspection leaks and failures.

1.8. The cathodic protection shop must:

1.8.1. Perform cathodic protection checks on all instilled systems as outlined in applicable directives.

1.8.2. Assist CEM for analyzing monthly data supplied by local Rural Electrification Administration.

1.8.3. Submit the completed AF Form 491, ”Cathodic Protection Operation Log for Impressed Current System,” to corrosion engineers as required.

1.8.4. Submit the Cathodic Protection Operating Log for AF Form 1686, ”Sacrificial Anode System”, to the corrosion engineers on a semi-annual basis.

1.8.5. Submit the AF Form 1658. “Annual Cathodic Protection Performance Survey, ” to the corrosion engineers on an annual basis.

1.8.6. Identify and submit maintenance requirements to instill systems following the procedures of AFM 85-5.

1.8.7. Install sacrificial anodes at points where frequent leaks occur, as well as the repair of breaks in coated lines.

1.8.8. Coordinate all phases of work with Work Control, CEM, and the corrosion engineer, as required.

1.8.9. Refer to the base corrosion engineer and missile corrosion engineer for systems management and technical advice.

1.8.10. Retain custody of cathodic protection test equipment.

1.8.11. In the absence of the corrosion engineer, inspect and record all leaks in the underground utility systems.

1.8.12. Coordinate on digging permits in the absence of the corrosion engineers.

1.8.13. Submit annual missile site cathodic protection logs to CEM regularly.

1.8.14. Submit required test reports to CEV on POL systems for reporting to the State Environmental Protection Agency.

1.8.15. The cathodic protection shop foreman, or his designee, will participate in project design reviews as necessary.

2. Procedures:

2.1. Use AF Form 1841, “Maintenance Action Sheet.” and the Real Property Installed Equipment (RPIE) Maintenance Checklist to autl1orizc and schedule cathodic protection program action at required regular intervals. Maintain a separate AF Form 1841 and RPIE Maintenance Checklist for each cathodic protection system on the base.

2.1.1. When AF Form 1841 is scheduled to the work center. the cathodic protection shop must contact the corrosion engineer and discuss the required work. At this time, the corrosion engineer must give technical instructions and establish the desired operating level for each cathodic protection system.

2.1.2. Upon completion of the servicing required by AF Form 1841 and the RPIE Maintenance Checklist, the cathodic protection shop must hand carry the completed forms to the corrosion engineer for review and filing. This review will determine the need for further corrective action if required.

2.1.3. The cathodic protection shop must annotate the proper AF forms and return them to the corrosion engineers when all corrective actions have been accomplished.

2.2. The appropriate superintendents shall report leaks in gas, water, sewer. high-temperature and hot-water, and liquid fuel facilities to the base corrosion engineer, or alternate, missile corrosion engineer at telephone ext 6145 or 7197, together with the estimated time the piping will be exposed for inspection. In the absence of the corrosion engineer, the cathodic protection technicians shall be notified at ext 6228. If the leak is to be repaired by a clamp, it is imperative the inspection be made prior to installation of the clamp.

2.3. The 341 CES/CEO, or his representative, will chair the Corrosion Control Meeting during which information will be exchanged, problems and solutions identified, and corrective actions initiated. This meeting will be attended by the base corrosion engineer. alternate engineer, protective coating engineer, missile corrosion engineer, cathodic protection foreman or technician, the superintendents, and anyone else that is appointed. The corrosion control meeting will be convened semi-annually, or more often if deemed necessary.

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Commander